

PATENT

a peripheral hub device including at least a USB host port;
a first transceiver coupled to the upstream USB [host] port of said computer; and
a second transceiver coupled to the [upstream] USB host port of said peripheral hub device, said first and second transceivers cooperate to form a wireless USB bus link between said computer and said peripheral hub device.

2. A computer system as recited in claim 1, wherein said computer includes a bus controller that controls the wireless USB bus link formed between said computer and said peripheral device.

3. A computer system as recited in claim 1,
wherein said computer has a housing, and
wherein said first transceiver is provided internal to the housing of said computer.

4. A computer system as recited in claim 1,
wherein said computer has a housing, and
wherein said first transceiver is provided external to the housing of said computer, and
said first transceiver couples to the USB host port of said computer.

5. (Canceled) A computer system as recited in claim 1, wherein said peripheral device is a printer.

5. A computer system as recited in claim 4,
wherein the peripheral hub device has a housing, and

PATENT

wherein said second transceiver is provided internal to the housing of said peripheral hub device.

6
7.

A computer system as recited in claim 4,

wherein the peripheral hub device has a housing, and

wherein said second transceiver is provided external to the housing of said peripheral hub device, and said second transceiver couples to the upstream USB port of said peripheral hub device.

7
8.

A computer system as recited in claim 1, wherein said peripheral hub device has a plurality of downstream USB ports.

9. (Canceled) A computer system as recited in claim 8,

wherein said peripheral hub further includes an upstream USB port, and

wherein said second transceiver is connected to the upstream USB port of said peripheral hub.

8
10.

(Twice Amended) A computer system as recited in claim 7, wherein said

computer system further comprises

a printer, and wherein said printer is connected to one of the downstream USB

[downstream] ports of the peripheral hub device.

9
11.

A computer system as recited in claim 1, wherein said computer supplies a wired, internal USB bus to the USB host port of said computer, and wherein said first transceiver comprises:

PATENT

a first antenna;

first transceiver circuitry for transmitting data at radio frequencies via said first antenna; and

a first bus interface that interfaces said first transceiver circuitry to the internal USB bus.

10
12. A computer system as recited in claim 9, wherein said first transceiver circuitry has a normal power mode and a low power mode, and the mode of said first transceiver circuitry is controlled by control signals supplied to said first transceiver via the internal USB bus.

11
13. A computer system as recited in claim 9, wherein said first transceiver circuitry comprises:

a first modulator that modulates and converts digital signals to be transmitted to produce analog signals of a first frequency;

a first up-converter operatively connected between said first modulator and said first antenna, said first up-converter converts the analog signals of the first frequency to analog signals of a second frequency that is greater than the first frequency, and supplies the signals of the second frequency to said first antenna;

a first down-converter that receives incoming analog signals of the second frequency from said first antenna and converts the incoming analog signals to incoming analog signals of the first frequency that is less than the second frequency; and

PATENT

a first demodulator operatively connected to said first down-converter, said first demodulator demodulates the incoming analog signals to obtain incoming digital signals.

¹²
~~14~~. A computer system as recited in claim ⁹~~11~~, wherein said second transceiver comprises:

a second antenna;

second transceiver circuitry for transmitting data at radio frequencies via said second antenna; and

a second bus interface that interfaces said second transceiver circuitry to the wireless USB bus.

¹³
~~15~~. A computer system as recited in claim ¹²~~14~~, wherein said second transceiver circuitry has a normal power mode and a low power mode, and the mode of said second transceiver circuitry is controlled by control signals supplied to said second transceiver via the wireless USB bus.

¹⁴
~~16~~. A computer system as recited in claim ¹²~~14~~, wherein said second transceiver circuitry comprises:

a second modulator that modulates and converts digital signals to be transmitted to produce analog signals of a first frequency;

a second up-converter operatively connected between said second modulator and said second antenna, said second up-converter converts the analog signals of the first frequency to

PATENT

analog signals of a second frequency that is greater than the first frequency, and supplies the signals of the second frequency to said second antenna;

a second down-converter that receives incoming analog signals of the second frequency from said second antenna and converts the incoming analog signals to incoming analog signals of the first frequency that is less than the second frequency; and

a second demodulator operatively connected to said second down-converter, said second demodulator demodulates the incoming analog signals to obtain incoming digital signals.

17. A radio frequency transceiver apparatus for providing a wireless USB bus, said transceiver apparatus comprising:

a USB connector for connecting to a hosting device;
a USB interface electrically connected to said USB connector;
a radio frequency transceiver electrically connected to said USB interface, said transceiver transmits and receives radio frequency signals ; and
an antenna operatively connected to said transceiver.

18. A radio frequency transceiver apparatus as recited in claim 17, wherein said USB connector is used to couple to a USB port of a computer system having a USB host controller.

19. A radio frequency transceiver apparatus as recited in claim 17, wherein said transceiver comprises:

a modulator that modulates digital signals to be transmitted to produce analog signals of a first frequency;

PATENT

an up-converter operatively connected between said modulator and said antenna, said up-converter converts the analog signals of the first frequency to analog signals of a second frequency that is greater than the first frequency, and supplies the signals of the second frequency to said antenna;

a down-converter that receives incoming analog signals of the second frequency from said antenna and converts the incoming analog signals to incoming analog signals of the first frequency that is less than the second frequency; and

a demodulator operatively connected to said down-converter, said demodulator demodulates the incoming analog signals to obtain incoming digital signals.

20. A radio frequency transceiver apparatus as recited in claim 19, wherein said modulator modulates the digital signals using QPSK modulation.

21. A radio frequency transceiver apparatus as recited in claim 19, wherein said transceiver further comprises:

a phase-lock-loop that synchronizes with the incoming analog signals to synchronize with the first frequency.

22. A radio frequency transceiver apparatus as recited in claim 21, wherein said transceiver apparatus has an active state and a low power state, and wherein said transceiver apparatus further comprises:

a power management unit that places said transceiver apparatus in one of the low power state and the active state.

15
23.

PATENT

A method for transmitting data over a USB bus from a computer to a peripheral hub device, comprising:

providing a first transceiver at the computer, the first transceiver being coupled to a USB host controller that controls a USB bus for the computer;

providing a second transceiver at an upstream port of the peripheral hub device; and

establishing a wireless USB bus link between the first and second transceivers, the wireless USB bus link being part of the USB bus.

16
24.

(Amended) A method as recited in claim [24] ¹⁵~~23~~, wherein said method further comprises:

managing power utilization of the first and second transceivers.